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`Web-Based Platform for Information and Analytics Management Using Agile Practices

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ABSTRACT: An information Management System is an information system that collects and manages data stored in a variety of formats and makes it accessible to the people who need it. It is used for the creation, analysis, maintenance, and visualization of information in an organization. The organization remains to keep its services to its members and serves as the central web of network for sustainable development. However, the organization still uses pen and paper recording and cabinet file storing for their records and information management, with their members growing every year more spaces will be needed to cover all members, such difficulties in the existing records management and enlarging population numerous troubles or issues could run down the organization. The main purpose of this study is to develop an information management system that will address the membership application, profiling, information dissemination/communication, and report generation of the organization. The researchers used the Agile method to develop the Information Management System with Data Analytics. The Agile method is composed of 6 phases: Requirements, Design, Develop, Test, Deploy, and Review. The evaluation of the system is based on ISO 25010. In

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Summary, the majority of the respondents who evaluated the developed system found the system to be compliant, tallying the grand mean of 4.64, and interpreted as Strongly Agree on the effectiveness of the system in terms of Functionality, Performance Efficiency, Compatibility, Usability, Reliability, Security, Maintainability, and Portability.

Keywords: *Information Management System, Record Management, Data Analytics, Agile Method, ISO 25010.*

I. INTRODUCTION

A system that transforms data into information and provides managers at all organizational levels with suitable communication is known as an information management system. Institutions require information systems that make it easier to manage papers created during digital business activities.

Record management in the public sector is not something new, it has always been a fundamental part of the government instruments that play a significant part in the matter of good governance and accountability. The management system provides easy access, creation, classification, use, maintenance, and disposition of records, as well as data security. In this context, a record is the personal information of members received by the organization. Envision modern technology takes the place of the standard methods, such replacement should be possible in each institution, administrative or nongovernmental.

The organization and staff will benefit from the creation of electronic records management systems, assisting them to have easy access to the data and information safely and more effectively.

Data Analytics is the process of integrating raw data from various sources to create conclusions and make predictions to enable innovation based on the information, data-driven decision-making is referred to in the term analytics. The industries of medicine, economics, computer science, material science, management science, and engineering have encouraged them to shift themselves to take advantage of the accessibility of enormous data and the disruptive potential of data analytics. The

utilization of data analytics substantially enhances the knowledge sharing within firms that fully arbitrate data analytic impact on strategic decision quality.

Concerning the service and structure of the organization, an information management system could help the organization to operate more easily and with ease in managing their records, eradicating any delay in work and lessening time consumed by the task.

The difficulty in storage, loss of records, waste of paper, poor exchange of information, waste of time and space, and difficulty in verifying the quality and quantity of data are just some of the many problems caused by the current paper-based records. With the growth of the population in the organization, it has been onerous to serve the organization efficiently and conveniently. We stressed the need for automated and user-friendly procedures.

II. CONCEPTUAL FRAMEWORK

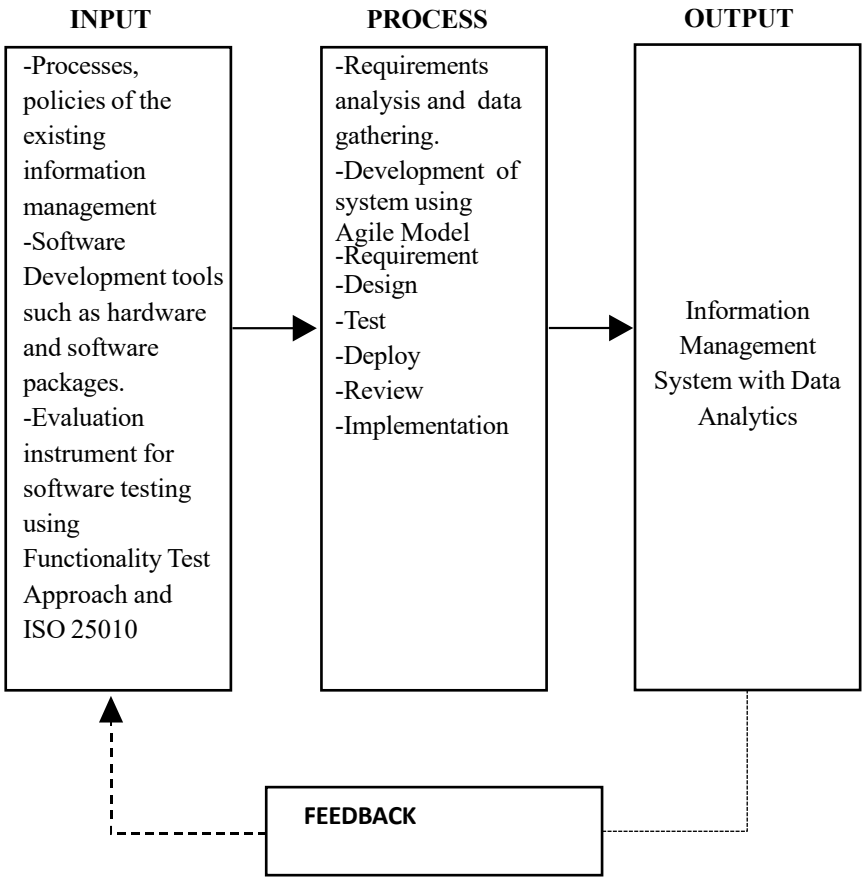

Fig. 1. Research Paradigm for the Development of the Information Management System with Data Analytics

Information Management Systemis software designed to facilitate the storage, organization, and retrieval of information, and transform data into valuable information. The system includes User Account Management, Membership Records Management, Information Dissemination / Communication, and Report Generation with Data Analytics.

To utilize the Functionality Test to determine whether the suggested Information Management System with Data Analytics conforms with the end-user procedure. Additionally, to use ISO 25010 to assess the proposed system's level of compliance.

III. OBJECTIVES OF THE STUDY

This study aims to develop an Information Management System with Data Analytics using the Agile Model. Specifically, it sought to attain the following:

1. to determine the processes of the existing information management system of the organization in terms of: Membership Application; Profiling; Information Dissemination/ Communication; and Report generation.
2. to develop the system using the Agile Model that will include the following modules: User Account Management; Membership Records Management; Information Dissemination/Communication; and Report generation with Data Analytics.
3. to test the proposed Information Management System with Data Analytics using a functionality testing approach.
4. to assess the proposed system's level of conformance with ISO 25010 software quality criteria in terms of compatibility, usability, security, maintainability, portability, functional suitability, and performance efficiency.

IV. RELATED STUDIES

Records management is in charge of effectively and methodically managing the production, retrieval, upkeep, use, and disposal of records in order to preserve their integrity, validity, dependability, and completeness. Records management must be

integrated with the creation of new organizational structures and information technologies. Using the appropriate

The preservation of authentic records depends on electronic record management systems. Records and archives administration should be a part of organizations.

Characteristic information Data is extracted, categorized, and varies based on organizational requirements in analytics, an initial stage of data processing that generates an overview of historical data to gather valuable information and also arrange the data for further analysis. Descriptive-analytical techniques are frequently used to help organizations increase efficiency and make better decisions, and data analytics continues to play a crucial role in the intelligence area.

Agile - meaning "the quality of being agile, readiness for motion, nimbleness, activity, dexterity in motion" - refers to software development methodologies that are trying to provide a response to the hungry business community's request for software development processes that are lighter, faster, and more agile. This is particularly true for the nascent mobile application environment and the quickly expanding and unstable Internet software sector. A significant quantity of literature and discussions have been sparked by the new agile approaches.

The most recent ISO 25010 will be taken into consideration in order to evaluate the intricacy and comprehensiveness of software quality models. It is the most recent model to be introduced and considers the primary peculiarities of contemporary software from the perspective of quality assessment. An international top-level standard describes this paradigm. Functional suitability, performance efficiency, interoperability, usability, security, portability, and maintainability make up the set of features of the reference model. Due to their continued evolution and specification at the sub-characteristics level based on ISO 25010 quality evaluation, the characteristics structure of software quality models will become increasingly complex.

V. METHODOLOGY

The study utilized the Agile Model of the system development cycle to design and develop the system. The Agile Model allows for quick assimilation of user needs and response to changes in those requirements during creation of software. The agile approach prioritizes functional software and highlights the necessity of developing software quickly in a setting with quickly shifting requirements. It is well known that the development of agile software development has been greatly influenced by lean manufacturing concepts.

The system is designed as a web-based information management system and has a flexible characteristic. It will also be responsive, giving the ability to access the system on smartphones. The user interface is designed to meet modern standards and to be user-friendly. The development of the whole system was based on the requirements and design that were gathered and planned by the researchers. At this point in the development process, the system's analysis and design are consistently produced, and real objects are coded and incorporated into the project's first iteration. HTML, CSS, JavaScript, and PHP are used in the system's development, while MySQL is used to build the database.

After the system's development phase was complete a functionality test approach was conducted. Functionality testing verifies that the individual function of the proposed system works in compliance with the requirements. And to determine and pinpoint possible errors and bugs in the system.

1. Unit Testing ensures that each function of the system is tested, to verify that it is working as desired and meets its design and requirements as intended. The researchers used dummy data to check the behavior of codes whether the codes are working as expected or not and to make sure that functionality proceeds.

2. System Integration Testing focuses on the overall testing of the complete system; the purpose of this testing is to evaluate the end-to- end system specifications. In this phase of testing, individual modules are combined and tested as a whole.

The researchers measure the software quality using ISO 25010. Because they are simple to demonstrate and facilitate the adoption of new standards for efficient industry use, international standards are a useful tool for research.

In order to bring the system's evaluation to a close, the researchers examined and totaled each respondent's responses to the following questions: strongly agree, agree, disagree, neither agree nor disagree, and strongly disagree. The researchers employed the Likert Scale to characterize the outcome. The following formula was used by the researchers to summarize the data:

$$\mathbf{WM} = \frac{f(1) + f(2) + f(3) + f(4) + f(5)}{\mathbf{N}}$$

Where: **N**=Number of Respondent**, f**=frequency**, WM**=Weighted Mean

VI. RESULTS AND DISCUSSION

The developed Information Management System with Data Analytics was implemented. Similarly, it was also presented to IT experts. The software quality of the developed system was evaluated using ISO 25010.

Table I. Functionality

Criteria	Mean	Description
Completeness	4.81	Strongly Agree
Correctness	4.76	Strongly Agree
Appropriateness	4.1	Agree
Weighted Mean	**4.55**	**Strongly Agree**

The respondents' mean distribution of answers is displayed in Table I. It displays the functioning with a weighted mean of 4.55, which the respondents understood as *Strongly* Agree. The assessment shows how well the system's functionality is being fulfilled. The assessment made sure the system was appropriate for information management tasks. By increasing documentation, automating communication, decreasing the need for handwritten records, increasing organisational workflow

efficiency, and making documents easier to retrieve when needed, the record management system raises the standard of care.

Table II. Performance Efficiency

Criteria	Mean	Description
Time Behavior	4.84	Strongly Agree
Resource Utilization	4.7	Strongly Agree
Capacity	4.73	Strongly Agree
Weighted Mean	**4.75**	**Strongly Agree**

As shown in Table II, the designed system received a weighted mean score of 4.75 for performance efficiency, which the respondents understood as Strongly Agree. The reason for this is that the system reacts quickly and has a lot of data storage capacity.

In order to support decision-making and other management tasks, information management systems use flow-processing methods based on computer data that are coupled with other operations to deliver information quickly and efficiently.

Table III. Compatibility

Criteria	Mean	Description
Co-existence	4.1	Agree
Interoperability	4.68	Strongly Agree
Weighted Mean	**4.39**	**Strongly Agree**

As represented in Table III below, in terms of compatibility the developed system tallied a weighted mean of 4.39 interpreted as *Strongly Agree* by the respondents. The respondents strongly agreed that the system is compatible and can perform its task in Windows 10 and different types of browsers such as Google Chrome, and Mozilla Firefox, and also can perform on mobile browsers.

The positive impact of an information management system includes better access

to information, more efficient administration, reduction in workload, better time management, and improvement in the quality of reports. It can provide the information required for informed planning, policymaking, and communication as well as organizational success.

Table IV. Usability

Criteria	**Mean**	**Description**
Appropriateness Recognizable	4.1	Agree
Learnability	4.84	Strongly Agree
Operability	4.78	Strongly Agree
User Error Protection	4.76	Strongly Agree
User Interaction Aesthetics	4.78	Strongly Agree
Accessibility	4.81	Strongly Agree
Weighted Mean	**4.67**	**Strongly Agree**

As represented in Table IV, the respondents found the developed system to be compliant in terms of usability, tallying a weighted mean of 4.67. The respondents strongly agreed on providing a user- friendly system. The system is easy to use, operate, and control, and also it can protect users against error and can be used with the widest range of characteristics. It provides relevant information to the organization by transforming data into information, it can perform tasks safely, effectively, and efficiently, and the system is timely by delivering information at the right time and to the right person.

The use of a record management system could be considered evidence that technology can be beneficial for the operation of a company. It is very important to have the ability to use the right information at the right time. The system allows fast and easy access to the information needed.

Table V. Reliability

Criteria	Mean	Description
Maturity	4.7	Strongly Agree
Availability	4.73	Strongly Agree
Fault Tolerance	4.1	Agree
Recoverability	4.1	Agree
Weighted Mean	**4.40**	**Strongly Agree**

With a weighted mean score of 4.40, the respondents deemed the developed system to be reliable, as shown in Table V. The responders overwhelmingly concurred that the system offers an accurate method for compiling and displaying the reports that the company requires.

When records are being stored, accessed, and retrieved, it has been noted that the advantages of digital record management systems, which include the ability to move records or files between departments and aid in standardising forms, terminology, abbreviations, and data input, are simple to use.

Table VI. Security

Criteria	Mean	Description
Confidentiality	4.81	Strongly Agree
Integrity	4.7	Strongly Agree
Non-repudiation	4.73	Strongly Agree
Accountability	4.81	Strongly Agree
Authenticity	4.81	Strongly Agree
Weighted Mean	**4.77**	**Strongly Agree**

The respondents' mean distribution of answers is displayed in Table VI. It indicates that respondents strongly agree with security, with a weighted mean of 4.77. The responders overwhelmingly concur that only a barangay representative or authorised administrator can access the system. It was also created to stop illegal access to or alteration of personal information.

Technology has certainly become very influential in the industry in the last decade; despite the positive influence it also brings threats and negative

consequences if not used properly. Record Management System would help to secure data protecting it against disaster, system failure, or unauthorized access that would result in damage or loss by protecting essential records with security.

Table VII. Maintainability

Criteria	Mean	Description
Modularity	4.1	Agree
Reusability	4.81	Strongly Agree
Analyzability	4.78	Strongly Agree
Modifiability	4.73	Strongly Agree
Testability	4.78	Strongly Agree
Weighted Mean	**4.64**	**Strongly Agree**

The respondents' mean distribution of answers is displayed in Table VII. It demonstrates that maintainability has a weighted mean of 4.64, which the respondents interpret as Strongly Agree. The system's ability to manually backup data and store annual records was overwhelmingly approved upon by the respondents.

As a result of growing digitalization, concepts related to records, information, and content management have evolved and changed fundamentally. Maintaining authentic records requires implementing the proper mechanisms to handle electronic records; records management systems have successfully preserved records in a way that maintains their dependability, integrity, and authenticity.

Table VIII. Portability

Criteria	Mean	Description
Adaptability	4.84	Strongly Agree
Install-ability	4.76	Strongly Agree
Replaceability	4.76	Strongly Agree
Weighted Mean	**4.78**	**Strongly Agree**

With a weighted mean score of 4.78, the respondents deemed the developed system to be portable, as shown in Table 4-8 above. The respondents overwhelmingly concurred that Windows 10 makes it simple to install and

remove the system. Any mobile browser platform can readily view the webpage.

The availability of record management systems makes it possible to make records, information, and recordings easily accessible so that they can be used whenever and wherever needed.

Table IX. Summary of Mean using ISO 25010

Criteria	Mean	Description
Functionality	4.77	Strongly Agree
Performance Efficiency	4.75	Strongly Agree
Compatibility	4.39	Strongly Agree
Usability	4.67	Strongly Agree
Reliability	4.40	Strongly Agree
Security	4.77	Strongly Agree
Maintainability	4.64	Strongly Agree
Portability	4.78	Strongly Agree
Weighted Mean	**4.64**	**Strongly Agree**

Overall, the respondents found the developed system to be compliant with ISO 25010 in terms of software quality tallying a weighted grand mean of 4.64 as depicted in Table 4-9 above. The system's security will only permit the admin to access the member information, barangay representative account information, register and manage the yearly records, the barangay representative can only access the system upon the activation of their account by an admin, thus giving them the privilege of communication between the admin, through the communication requests and messages they have the access to send various messages and files.

Today's organisations rely heavily on data and managing data effectively and efficiently is seen as a key component of organisational strategy. In order for managerial decision-making to be successful and effective, decision-makers must be given accurate, timely, and pertinent information. A sort of information system known as an information management system is one that compiles internal data from the system into forms that are both intelligible and practical for use in managerial decision-making. An information management system

influences managerial decision-making by improving the quality of the information.

VII. CONCLUSION

The study focused on the development of a system that can be useful in retrieving, communicating, decision-making, and generating reports to lessen work minimize the time in inputting data, and create a systematic change from the existing system. Based on the observation and interview, the researcher found out that the organization had difficulties in recording and managing using the existing system, so the researchers developed an Information Management System with Data Analytics to lessen the difficulty of their work and help them in their decision- making. Furthermore, the services of the information management system should be enhanced.

The following deductions were made in light of the study's findings: (1) The following modules in the developed system solve the issues encountered: (a) Membership Application – the user can register members of the organization with ease when the user registers a member for membership, it successfully processed the recorded data and can be printed eventually. The system updates automatically the records. (b) Records Management – the user can view and modify information of each member of the organization. Records from the archives can protect the existing data. The admin is also able to manage the system users, management of users enables the admin to successfully approve or deny user requests and delete existing user accounts, and profile management able the users to change their user information. (c) Report Generation with Data Analytics – the user can export and print the necessary data such as the master list of each yearly record either archived or active, the data analytics presentation in graphical format, the information is accurate based on the data stored. It displays various information about the status of the organization’s members and can be printed. (d) Information Dissemination/Communication – the ILAW Admin can post announcements in the system, communicate with the different Barangay Representatives, and exchange information and files through the system. Each user can retrieve the sent messages and files from the draft. Hence,

the modules of the system work properly and function correctly. (2) IT professionals assist the organisation in implementing the designed technology. The system proved useful to them. (3) The respondents scored the developed system with a very acceptable mean of 4.77 for functionality, an acceptable mean of 4.75 for performance efficiency, an acceptable mean of 4.39 for compatibility, a very acceptable mean of 4.67 for usability, an acceptable mean of 4.40 for reliability, a very acceptable mean of 4.77 for security, a very acceptable mean of 4.64 for maintainability, and a very acceptable mean of 4.78 for portability. The evaluation was conducted using ISO 25010.

Therefore, the development of the Information Management System with Data Analytics addressed the problem of the existing record management such as the slow processes of registration of members, manual cabinet file record keeping and management, and time-consuming report generation. Hence, the objective of the study is met.

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